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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/697,025	10/26/2000	Mehrdad Nikoonahad	TNCR.183US0	3437
36257	7590	07/14/2004	EXAMINER	
PARSONS HSUE & DE RUNTZ LLP 655 MONTGOMERY STREET SUITE 1800 SAN FRANCISCO, CA 94111			SMITH, ZANDRA V	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/697,025

Applicant(s)

NIKOONAHAD ET AL.

Examiner

Zandra V. Smith

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 14-33, 35-60, 62 and 63 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14, 15, 35, 36 and 48-50 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-7, 10-12, 16, 17, 20-22, 25-30, 32, 37-40, 45-47, 51-56, and 61 is/are rejected.
- 7) ☒ Claim(s) 3-4, 8-9, 18-19, 23-24, 31, 33, 41-44, 57-60, 62-63 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

Claim 62 is objected to because of the following informalities: claim 62 depends from cancelled claim 61. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-7, 10-12, 16-17, 20-22, 25-27, 32, 51, and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by *Nose et al.* (5,751,426).

As to **claims 1, 10, 51**, Nose discloses a positional deviation measuring device and method for measuring the positional deviation between a plurality of diffraction gratings formed on the same object, comprising:

a laser light source (3) providing radiation to illuminate two periodic patterns (2a, 2b) simultaneously;

a detector and optics collecting radiation from the patterns to form an image of at least a portion of the two patterns in a two dimensional array detector (CCD); and

a processor determining misalignment between the structures from outputs of the detectors (col. 8, lines 20-55 and col. 11, line 62-col. 12, line 2).

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As to **claim 2**, Nose discloses everything claimed as applied above, in addition the phase difference between output of the detectors is determined (col. 5, lines 46-51 and col. 6, lines 20-23).

As to **claims 5-6, 32** Nose discloses everything claimed as applied above, in addition a beam of oblique radiation is provided and collection is made at a direction normal to the reference plane (see fig. 10).

As to **claims 7 and 22**, Nose discloses everything claimed, as applied above, in addition the size of the light beam is adjusted in accordance to the size of the grating (col. 8, lines 55-65).

As to **claims 11-12, 26**, Nose discloses everything claimed, as applied above, in addition the radiation is collected only along directions away from a specular reflection direction (see fig. 10).

As to **claims 16-17, 25, 27, 56**, Nose discloses a positional deviation measuring device and method for measuring the positional deviation between a plurality of diffraction gratings formed on the same object, comprising:

- a laser light source (3) providing radiation to illuminate two periodic patterns (2a, 2b) simultaneously;

- a detector array (CCD or TV camera) and optics (including lens 23) collecting radiation from the patterns to form an image of at least a

- portion of the two patterns in a two dimensional array detector (CCD); and

- a processor determining misalignment between the structures from outputs of the detectors (col. 8, lines 20-55 and col. 11, line 62-col. 12, line 2).

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As to **claims 20-21**, Nose discloses everything claimed, as applied above, in addition the source illuminated obliquely (see fig. 10).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28-30, 52-55, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nose et al (5,751,426)*.

As to claims 28-30, 52-54, Nose discloses everything claimed, as applied above, with the exception of the numerical aperture of the refractive element, however it would have been obvious to one having ordinary skill in the art at the time of invention to use a refractive element with the claimed numerical aperture as a means to ensure that the structures are sufficiently resolved.

As to claims 55 and 61, Nose discloses everything claimed, as applied above, with the exception of a stepper or etched, however since the alignment marks are on a mask and used for the purpose of optical alignment (col. 1, lines 15-25) the use of stepper would have been an obvious means to move the system to facilitate alignment.

Claims 37-39, 40, and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Everett et al. (5,808,742)*.

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As to claims 37, 40 and 45, Everett discloses an optical alignment apparatus having multiple parallel alignment marks, comprising:

a source providing radiation to illuminate two periodic patterns simultaneously (13, 21, fig. 5);

a detector and optics collecting radiation from the patterns to form an image of at least a portion of the two patterns in a two dimensional array detector (CCD); and

a processor determining misalignment between the structures from outputs of the detectors (col. 4, lines 30-31 and col. 6, lines 26-45). Everett differs from the claimed invention the numerical aperture of the collecting optics is not provided, however it would have been obvious to one having ordinary skill in the art at the time of invention to use a refractive element with the claimed numerical aperture as a means to ensure that the structures are sufficiently resolved.

As to **claims 38-39, 46-47**, Everett discloses everything claimed, as applied above, with the exception of the numerical aperture of the refractive element, however it would have been obvious to one having ordinary skill in the art at the time of invention to use a refractive element with the claimed numerical aperture as a means to ensure that the structures are sufficiently resolved.

discloses everything claimed, as applied above, with the exception of the numerical aperture of the refractive element, however it would have been obvious to one having ordinary skill in the art at the time of invention to use a refractive element with the claimed numerical aperture as a means to ensure that the structures are sufficiently resolved.

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Allowable Subject Matter

Claims 14-15, 35-36, 48-50 are allowed.

Claims 3-4, 8-9, 18-19, 23-24, 31, 33, 41-44, 57-60, 62-63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious detection at a normal direction after oblique illumination, summing outputs of the detectors, cross correlating, causing relative motion between apertures and detectors, 10 second integration time, mechanical shutter.

Response to Arguments

Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

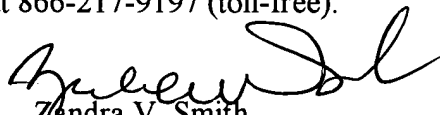
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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra Smith whose telephone number is 571 272 2429. The examiner can normally be reached on Monday - Thursday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on 571 272 2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Zandra V. Smith
Primary Examiner
Art Unit 2877

July 12, 2004